Appendix C - Educational and Public Outreach Materials

Quality Ozark Streams (City Utilities insert)

Front Porch News – Quality Ozark Streams

Storm Water Hotline, Web Page, and Annual Report (***CEE*** Spring 2004 newsletter)

Local Developer Contributes to Good Water Quality (***CEE*** Spring 2004 newsletter)

Activity Announcements
Storm Water Quality: Discussing Springfield's Urban Runoff (Chamber of Commerce)
Free Waste Tire Collection
TRIM II: Urban Forestry and Its Affects on Storm Water Management
Watershed and Water Quality Planning Seminar
Neighborhood Clean Up
Seeing Green With Trees: The Economic and Environmental Benefits of Urban Forests

Illicit Discharge Informational Mailings
Letter to Auto Industry Facilities

Show-Me Yards & Neighborhoods
Letter to Professionals – October 2003
Take Home Tips
Cool-Season Grasses Lawn Care and Maintenance Calendar

Quality Ozark Streams . . . Start in OUR Backyard.

Did you know?

The City of Springfield is now required by Federal Law to develop and implement a plan to control the amount of pollution in our storm water runoff. Springfield is the first city in the state to receive the required permit to develop this plan.

What is storm water runoff?

Storm water runoff is rain and snow melt that runs off the surface of buildings, parking lots and yards into nearby storm water pipes and ditches and directly into Ozarks streams, rivers and lakes. It does NOT go to a treatment facility.

What kind of pollution is in storm water runoff?

Storm water runoff can contain sediment from erosion of soil; nutrients such as phosphorus and nitrogen, from fertilizers, grass clippings and leaves; bacteria from animal waste or decaying vegetation; or many other pollutants such as petroleum products or metals from automobiles and industrial activity.

It won't be easy.

Nothing worthwhile ever is. The Springfield New-Leader describes this undertaking by the City as "an honor and a challenge." Every citizen of Springfield has an opportunity to make an important contribution. **See the back for ideas on how YOU can help contribute to Quality Ozark Streams.**

Quality Ozark Streams . . .

One Person Can Make a Difference. Here's How . . .

1. Dispose of yardwaste properly.

Placing grass clippings, leaves and other yardwaste in streets and ditches is a City ordinance violation, leads to increased flooding and degrades water quality. Consider composting or using the City's Yardwaste Recycling Center to dispose of yardwaste without harming the environment. Call the City's Recycling Hotline at **864-1904** for more information.

2. Dispose of household chemicals properly.

Motor oil, pesticides and paints are examples of many household chemicals that, if placed in the storm water system or on the ground, can harm our streams or groundwater. If you are a resident of Springfield/Greene County you may take these items to the City's Household Chemical Collection Center at no charge. For more information or to make an appointment, call the City's Recycling Hotline at **864-1904**.

3. Fertilize smart!

A simple soil test will tell you if your lawn needs fertilizer. Applying excess fertilizer is a waste of time and money and adds harmful nutrients to streams. To learn more about soil tests call the University of Missouri Extension Office at **862-9284**. To learn more about environmentally friendly lawn care call Show-Me Yards and Neighborhoods at **864-2006**.

4. Help watch for illegal dumping.

If you see someone dumping into a stream call the City's Storm Water Services Division at **864-1901** or submit a Citizen Service Request at www.springfieldmogov.org.

By working together as Partners in Protecting Our Environment we can successfully contribute to Quality Ozark Streams. Department of Public Works

CITY of SPRINGFIELD

Quality Ozark Streams Starts in OUR Backyard.....

Do you enjoy fishing, swimming or boating in our many nearby beautiful lakes, streams and rivers? Or, perhaps, you just enjoy relaxing near the water. Ensuring we continue to enjoy the abundant opportunities for recreation on area waters is everybody's responsibility. Protecting both ground and surface water is a high priority in our community.

The City of Springfield is now required by Federal Law to develop and implement a plan to control the amount of pollution in our stormwater runoff. Springfield is the first city in the state to receive the required permit to develop this plan.

Stormwater runoff is rain and snow melt that runs off the surface of buildings, parking lots and yards and into nearby storm water pipes and ditches and directly into Ozarks streams, rivers and lakes. It does NOT go to a treatment facility.

Stormwater runoff can contain sediment from erosion of soil; nutrients such as phosphorus and nitrogen from fertilizers, grass clippings and leaves; bacteria from animal waste or decaying vegetation; and many other pollutants such as petroleum products or metals from automobiles and industrial activity.

It won't be easy. Nothing worthwhile ever is. The *Springfield News-Leader* describes this undertaking by the City as "an honor and a challenge." Every citizen of Springfield has an opportunity to make an important contribution.

One person can make a difference. Here's how:

Dispose of yardwaste properly.

Placing grass clippings, leaves and other yard waste in streets and ditches is a City ordinance violation, and leads to increased flooding and degrades water quality. Consider composting or using the City's Yard Waste Recycling Center to dispose of yard waste without harming the environment. Call the City's Recycling Hotline at 864-1904 for more information.

Dispose of household chemicals properly.

Motor oil, pesticides and paints are examples of many household chemicals that, if placed in the storm water system or on the ground, can harm our streams or groundwater. Residents of Springfield/Greene County can take these items (generated from households -- businesses are not included) to the City's Household Chemical Collection Center at no charge. For more information or to make an appointment, call the City's Recycling Hotline at 864-1904.

Fertilize smart!

A simple soil test will tell you if your lawn needs fertilizer. Applying excess fertilizer is a waste of time and money and adds harmful nutrients to streams. To learn more about soil tests, call the University of Missouri Extension Office at 862-9284. To learn more about environmentally friendly lawn care, call *Show-Me Yards and Neighborhoods* at 864-2006.

Help watch for illegal dumping.

If you see someone dumping into a stream, call the City's Storm Water Services Division at 864-1901 or notify us by submitting a Citizen Service Request at www.springfieldmogov.org. FP

Storm Water Hotline

To report spills, dumping or discharges of pollutants to the storm water system or streams, or other water quality problems, call Springfield's Storm Water Services Division at 864-1901 or submit a Citizen Service Request at www.springfieldmogov.org/webapps/serv_req/.

What to watch for:

*Dumping of motor oil or other chemicals in streets, ditches or storm drains

*Discharges of commercially generated wash waters (e.g. from washing of trucks, equipment, parking lots, structures, or from services such as carpet cleaning) to the street and/or storm drains

*Improper outdoor storage of chemicals and other materials that can pollute storm water runoff

*Disposal of grass clippings, leaves, or other yardwaste in streets and ditches

*Sediment discharging from construction sites, or other ersion problems (for construction site erosion contact the local MDNR office at 891-4300; for waterways erosion, contact Public Works Waterways Maintenance at 864-1470).

Copy These Down...

How green is your office? These tips will make it more eco-friendly, as well as saving some money.

* **Use paper efficiently.** Making two-sided prints and copies, printing multiple images per page and printing on-demand (creating documents only in the quantity and at the time needed) prevents waste and saves energy. EPA estimates it takes 10 times more energy to manufacture a piece of paper than to create another print or copy.

* **Recyle the paper you use and use recycled paper.** Install bins in several office locations to make it easy to collect paper for recycling or for reuse as notepaper. And commit to purchasing recycled paper - it can meet the same performance specifications as non-recycled paper.

***Return print/copy cartridges and supplies for recycling.** Never throw a spent toner cartridge away. These components have multiple lives. Remanufactured cartridges are built and tested to the same performance specifications as new-build products. Or consider using solid ink printers, which eliminate cartridges altogether and generate about 95% less waste during use than a typical color laser printer.

Storm Water Web Page

The City of Springfield Storm Water Services Division announces the release of a new web page and an interactive storm water map.

Storm Water Services Division Web Page: Learn about what the Division does, the basics of storm water, and the requirements of Springfield's NPDES storm water permit that gives the City the responsibility of monitoring the quality of storm water discharges. Meet the Division staff, download a variety of storm water documents, and view a list of current storm water improvement projects. Release of this web site represents a commitment by the City to increase public education and involvement on storm water issues.
http://www.springfieldmogov.org/stormwater

Interactive Storm Water Map: View storm water system features, permit sampling points, unfunded needs, service requests and flood reports for May 2002, July 2000 and September 1993.
http://www.springfieldmogov.org/maps/.

Any questions or comments can be directed to:

Carrie Lamb, Environmental Assistant
Storm Water Services Division
Department of Public Works
City of Springfield, Missouri
Phone: 417-864-1996
Fax: 417-864-1907
carrie_lamb@ci.springfield.mo.us

Storm Water Annual Report

Springfield's first annual report for the City's NPDES Storm Water Permit is now available and can be downloaded at www.springfieldmogov.org/stormwater. Bound color copies are also available at a reproduction cost of $25 by calling 864-1996.

American consumers and industry throw away enough aluminum in a year to rebuild our entire commercial airplane fleet every three months!

Recycling one aluminum can saves enough electricity to power a TV or a 100-watt light bulb for three hours!

LOCAL DEVELOPER CONTRIBUTES TO GOOD WATER QUALITY

By Carrie Lamb, Environmental Assistant
Storm Water Services Division

When Dan Scott, local architect with Jericho Development Company LLC, began planning the renovation of the Marquette Hotel at Jefferson and Walnut, he knew that power washing would be necessary to remove several layers of paint from the building's exterior. If proper measures were not taken, residue in the wash water would be carried to nearby waterways via the storm water drainage system. When he contacted Springfield's Storm Water Services Division to inquire about proper handling of the wash water, the Division was pleased to see this concern for water quality from the business sector. The City's Storm Water Services and Sanitary Services Divisions worked with Mr. Scott to comply with the storm water and wastewater regulations mandated by federal and state law.

Springfield received its National Pollutant Discharge Elimination System (NPDES) storm water permit from the Missouri Department of Natural Resources in July 2002, becoming the first city in the State of Missouri to do so. This permit assigns to the City the responsibility of monitoring the quality of storm water discharging from the storm water system to area waterways and requires the development of a storm water management program. The NPDES Program legislation was not accompanied by a funding appropriation. Cities that are subject to these laws must meet the permit requirements of this unfunded mandate with existing resources. For this reason, voluntary efforts to inquire about and follow good storm water practices are an extremely valuable part of a successful storm water management program.

According to federal and state regulations, wash waters, such as those generated from exterior power washing of the Marquette Hotel, need to be completely contained and disposed of through the City's sanitary sewer system, which carries wastewater to the City's two treatment plants. Atkins Weatherproofing, the contractor retained by Mr. Scott for the exterior paint removal, worked with the Sanitary Services Division to obtain approval for disposal of the wash waters in an on-site sanitary sewer drain. Containing and pumping the waters to the sanitary sewer drain was accomplished with the use of a few sandbags and a small sump pump and hose. Frank Atkins, owner of Atkins Weatherproofing, commented on this process. "It was not as much of a headache as we had anticipated in the beginning. This project is a pretty difficult one in terms of size and the number of layers of paint to be removed. No contractor should have a problem with doing this on any project." In working with Mr. Atkins, the Storm Water Services Division also stressed the importance of good "housekeeping" practices, including daily cleanup of the project site and allowing ample time for thorough cleanup when rain is forecasted.

As the City increases its efforts to improve public awareness of storm water quality issues, simple measures such as those used in this project should become commonplace. The City of Springfield commends Dan Scott of Jericho Development Company LLC and Frank Atkins of Atkins Weatherproofing for their efforts. This project is just one example of good storm water practices. Other ways in which businesses and citizens can make an important contribution to protecting the water quality of our community include properly disposing of yardwaste and household chemicals, minimizing the use of lawn fertilizers, and reporting illegal discharges and water quality problems.

To inquire about good storm water practices or to report illegal discharges or water quality problems, please contact the City of Springfield Storm Water Services Division at 864-1901.

WELCOME!

Springfield's Public Works Department recently created a new Urban Forester position and the job has been awarded to **Alan Moore**. Alan began in November and his duties include monitoring city street trees, coordinating the new Neighborwoods program and assisting the public, city staff and other agencies on urban forestry issues. He will also manage the city tree permit program, help develop, revise and enforce applicable city ordinances and coordinate efforts to ensure that Springfield continues to be a Tree City USA.

Alan grew up in Houston, Texas. After receiving a forestry degree from Texas A&M in '93, he worked on projects that took him all over, including Nebraska, Florida, Idaho, Washington, California, Georgia and Ohio.

~~~~~

As a result of the park sales tax approved in 2001, the Springfield-Greene County Park Board has hired its first Park Planner, **Jerany Jackson**!

Jerany grew up in Neosho and Monett. After graduating in 1992 with a degree in landscape architecture from the University of Arkansas in Fayetteville, she began her career with a major world-wide planning and design firm in Fort Lauderdale. Since then she has traveled extensively, including time spent living in Italy and Japan. Eight years ago, she and her husband moved back to Springfield. More than anywhere she's been, southwest Missouri is the best place she's found to call home for her family.
~~~~~

Springfield Area Chamber of Commerce
Environmental Issues Business Forum

Storm Water Quality:
Discussing Springfield's Urban Runoff

Springfield and Greene County have contended with storm water issues for many years, but usually from the standpoint of the quantity of runoff rather than its quality.

In 2002, Springfield became the first city in Missouri to obtain a discharge permit under EPA's municipal storm sewer regulations. This places responsibility on the City for storm water entering local streams.

One year into that program, the City is completing an assessment of the types and levels of pollutants found in Springfield's urban runoff.

Please join us at the Springfield Area Chamber of Commerce, 202 S. John Q. Hammons Parkway, to discuss findings of this assessment process.

Thursday, November 13
Noon - 1:15 pm
Cost is $10 and includes lunch.

Featured speakers:

Todd Wagner
Principal Storm Water Engineer
City of Springfield, Public Works Department
Mr. Wagner will review the program along with some of the problem areas and solutions implemented to date. Other problem areas may need longer-term solutions, requiring considerable public input and participation.

Tim Smith
Administrator
Greene County, Resource Management Department
Greene County is also operating under a discharge permit and is in the early phases of implementation. Mr. Smith will discuss the county program, as well as the status of the Vision 20/20 Water Quality Planning Group.

RSVP online at
www.springfieldchamber.com/calendar

Free Waste Tire Collection

Help prevent the spread of West Nile Virus
and clean up your neighborhoods by removing
discarded tires from the environment.

Saturday, November 22, 2003
8 a.m. — 2 p.m.
Ozark Empire Fairgrounds
Gate 5 off Norton Road
ONE DAY ONLY

Waste tires will be accepted at no charge from city residents or neighborhood groups only. Waste tires from businesses cannot be accepted.

Special thanks to Ozark Empire Fairgrounds for the use of the facility for this one-day event.

Urban Neighborhoods Alliance

Community Partnership
OF THE OZARKS, INC.

CITY of SPRINGFIELD

Funding by:

Missouri Department
of Natural Resources

You are invited to a professional development seminar hosted by Ozark Greenways

TRIM II:

Urban Forestry and Its Affect on Storm Water Management

Thursday, December 4

11:30—1:00 p.m.

At Drury University
Freeman Hall, Hoblett Room

(Northeast side of campus)
Park in Lot #7 on Summit and Webster

Featured Speaker
Munsell McPhillips, Ph.D.
Storm Water Engineer
With the St. Louis firm, Intuition & Logic

As rapid development continues in southwest Missouri, the water quality of our streams is increasingly affected by loss of riparian buffer areas and forest cover, and changes in hydrology. It is important that we develop a new understanding of the important role healthy stream corridors play in maintaining the quality of our streams and lakes and how to successfully manage and restore these waterways. With the help of a grant from the Missouri Department of Conservation, Ozark Greenways is bringing Munsell McPhillips, Ph.D. of the St. Louis firm, Intuition & Logic to Springfield to discuss creative solutions for urban stream management and storm-water quality protection through application of sound principals of forestry, bioengineering and stream morphology.

Please RSVP with this form by Dec. 1

Hosted by

Ozark Greenways Incorporated

Sponsored by

Conservation Department Missouri

TRIM II
A program of the Missouri Department of Conservation

YES, I would like to make _____ reservations @ $10 each (includes lunch) for the TRIM II presentation.

A check for $_____ is enclosed. **Mail check payable to:** Ozark Greenways, P.O. Box 50733, Springfield MO 65805

NAME: _____ **COMPANY NAME:** _____

ADDRESS: _____

PHONE #: _____ **EMAIL:** _____

ADDITIONAL ATTENDEES: _____

_____

Co-Sponsored by:

Watershed Committee of the Ozarks

JRBP James River Basin Partnership

UWRB *Upper White River Basin Foundation*

Table Rock Lake Water Quality, Inc.

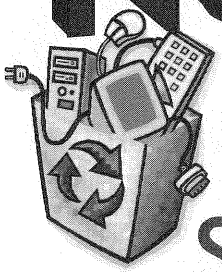
Presenters include:

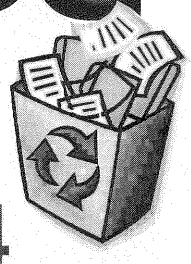
Becky Shannon *Chief,* *Watershed Protection Section*	*- MDNR*
Tim Smith, P.E.	*- Greene County Resource Management*
Todd Wagner, P.E. *Principal Stormwater Engineer*	*- City of Springfield Public Works*
Loring Bullard *Director*	*- Watershed Committee of the Ozarks*
Holly Neill *Executive Director*	*- James River Basin Partnership*
Floyd Gilzow *Executive Director*	*- Upper White River Basin Foundation*
Dave Casaletto *Program Coordinator*	*- Table Rock Lake Water Quality, Inc.*
Steve McDonald, P.E., M.B.A.	*- Carollo Engineers*
Samuel Darkwah, Ph.D.	*- Carollo Engineers*
Larry Coffman *Associate Director,* *Programs and Planning Division*	*- Prince George's County, MD*
Len Wright, Ph.D., P.E.	*- Carollo Engineers*
Charles Ikenberry	*- Carollo Engineers*

Watershed and Water Quality Planning: Innovative Strategies for Meeting Regulatory and Growth Challenges

Module 1	Introductions and Workshop Background	*9:00 - 9:10*
Module 2	Regulatory Update	*9:10 - 9:30*
Module 3	Local Programs and Concerns: Panel Presentation/Discussion - Greene County, Missouri - City of Springfield, Missouri - Watershed Committee of the Ozarks - James River Basin Partnership - Upper White River Basin Foundation - Table Rock Lake Water Quality, Inc.	*9:30 - 10:15*
	Networking Break	***10:15 - 10:30***
Module 4	Watershed and Water Quality Planning: TMDLS, Water Quality Trading, and Emerging Issues	*10:30 - 11:00*
Module 5	A Cutting-Edge Approach to Watershed Planning Using GIS, Models, and Remote Sensing Tools	*11:00 - 11:30*
Module 6	Goals and Impacts of Low Impact Development	*11:30 - 12:00*
	Lunch Break	***12:00 - 12:45***
Module 7	Goals and Impacts of Low Impact Development: A Case Study	*12:45 - 1:15*
Module 8	Optimal Distribution of Stormwater Controls	*1:15 - 1:45*
	Networking Break	***1:45 - 2:00***
Module 9	Stormwater Master Planning and CIP Development: A Case Study	*2:00 - 2:30*
Module 10	Garnering Public Support for Stormwater Utility Development	*2:30 - 3:00*
	Open Discussion	***3:00 - 3:30***

Neighborhood Clean-Up





Saturday April 24, 2004

For Neighborhood Residents ONLY! **NO BUSINESSES**

BRING YOUR TRASH, YARDWASTE, APPLIANCES, AND TIRES*

***Tires collect water that create environments for WEST NILE VIRUS. Take advantage of this opportunity to dispose of your old tires for FREE and help prevent West Nile.**

8am-2pm	**Woodland Heights Neighborhood at Reed Middle School:** Contact: Jesse Tate 865-6411
8am-12pm	**Heart of the Westside Neighborhood at Nichols Park:** Contact: Cathy Lutz 869-2007
8am-2pm	**Midtown Neighborhood at Cox North Benton St. parking lot:** Contact: Bob Horton 865-3959
8am-12pm	**Grant Beach Neighborhood at Grant Beach Park:** Contact: Pauletta Dunn 831-2895
9am-2pm	**Tom Watkins Neighborhood at Tom Watkins Park:** Contact: Janet Dankert 523-6257
8am-12pm	**Robberson Neighborhood at Dale St. United Methodist Church:** Contact: Dale St. Methodist Church 866-4378 (Press 1)

Bulky Item Pickup available by appointment only on 4/24. Call your neighborhood contact.

Computers and Electronics: Take to The Computer Recycling Center at 536 E Commercial, open from 9am-1pm on 4/24 (866-2588). There is a $10 fee for safe and proper disposal of computer monitors, televisions and microwaves. All other electronics are recycled at no charge.

Motor Oil: Accepted at all O'Reilly Automotive and Auto Zone locations and at the City's Household Chemical Collection Center by appointment (864-2000).

The Household Chemical Collection Center will be available to these neighborhoods by appointment only during this collection from 9am-1pm. Call 864-2004 for more information or to make an appointment by 5pm April 21. Please call to make your appointment **BEFORE** packing materials to receive instructions on how to transport them.

Household Hazardous Materials Accepted:

Pesticides	Automotive Fluids
Cleaners	Mercury Thermometers
Solvents	Lawn Chemicals/Fertilizers
Anti-Freeze	Auto/Boat Batteries
Drain Cleaners	Oil-based Paint

Look for "SIGNAL WORDS"- These indicate that materials should be disposed of at HCCC.
"CAUTION" "CORROSIVE" "POISON" "COMBUSTIBLE" "FLAMMABLE"
Latex paint will not be collected on 4/24. Dispose of by absorbing with cat litter or newspapers.

Sponsored by: The neighborhoods listed; Urban Neighborhoods Alliance, Community Partnership of the Ozarks, Caring Communities, The City of Springfield and The Springfield Greene County Health Department.

Seeing Green with Trees: The Economic and Environmental Benefits of Urban Forests Webcast

Presented by
International City/County Management Association (ICMA)
Hosted by
Missouri Department of Conservation
City of Springfield
City Utilities of Springfield

May 18, 2004 - 12:30 PM

Springfield Conservation Nature Center

(Map and directions on reverse side)

Registration Required -- Call 417-629-3423

The webcast presentation is a free service of MDC, City of Springfield, and City Utilities.

Many local governments face the challenges of reducing air pollution, minimizing stormwater runoff, and improving water quality. One answer to these problems may already have taken root in your community. This webcast will provide an overview of how trees have been used by local governments to meet their regulatory requirements, save money, and improve community quality of life.

Agenda:

12:30 PM **Registration**
1:00 – 2:30 PM **Webcast**

- **Welcome** – Bob O'Neill, ICMA President
- **Overview of the Economic and Environmental Benefits of Urban Forests** – Cheryl Kollin, Director of Urban Forestry, American Forests
- **Salem, Oregon, Case Study** – Peter Gutowsky, Senior Planner, City of Salem, Oregon
- **Charlotte, North Carolina, Case Study** – Laura Brewer, Senior Urban Forester & Nick Roberts, Systems Analyst, City of Charlotte, North Carolina
- **What Can Local Officials Do?** – Gary Moll, Vice President of Urban Forestry, American Forests

2:30 PM – 2:45 PM **Break** (Beverages and snacks provided by City Utilities of Springfield)
2:45 - ? PM **Questions and Answers** of MDC Urban Foresters Cindy Garner and Jon Skinner

Who Should Attend:

This webcast is for all local government officials, including city mayors, city council members, city managers, assistant city managers, public works directors, environmental managers, city engineers, parks and recreation supervisors, planning officers, and community development officials.

CITY of SPRINGFIELD

September 3, 2003

To Facility Manager:

The City of Springfield Storm Water Services Division is providing this information to establishments who may be engaged in cleaning or washing automotive vehicles or other transportation related vehicles including professional car washes, automotive detail shops, mobile car, truck, trailer, train, or other transportation related cleaning services, automobile dealers, and automotive repair and maintenance services. Federal and state regulations and the Springfield City Code prohibit the discharge of wash waters unless a permit authorizing these discharges is obtained from the Missouri Department of Natural Resources (MDNR). These regulations and permit requirements apply to wash waters other than those generated by non-commercial car washing or from single-family residences or persons washing items for their personal use, and regardless of what kind of material is being washed off or the biodegradability of the detergents being used. A discharge permit from MDNR is not required if the wash water is completely contained and disposed of to the sanitary sewer. If you are not already doing so, please take the necessary steps to ensure that all wash waters from cleaning of vehicles, equipment, structures and other items are completely contained and disposed of to the sanitary sewer unless they are covered under a discharge permit issued by MDNR. Technical bulletins issued by MDNR regarding the discharge of wash waters are included for your reference.

Please also note that diverting wash waters from the storm drainage system to the sanitary sewer system must be done in accordance with Federal, State, and local rules and regulations and such that no storm water is introduced into the sanitary sewer system. Prior approval for methods used to divert wash waters to the sanitary sewer must be obtained from the Sanitary Services Division at (417) 864-1923. Discharges to the sanitary sewer must also comply with Chapter 120 of the Springfield City Code (Wastewater Regulations). Applicable fees and charges may apply. Permits may also be required through the Building Development Services Department at (417) 864-1059 for any changes or new building, plumbing, electrical, structural or other work performed.

Thank you for your cooperation on this issue. If you have any questions, please feel free to call me at (417) 864-1996.

Carrie Lamb
Environmental Assistant
Storm Water Services Division

Springfield/Greene County
Choose Environmental Excellence

Watershed Committee of the Ozarks

Natural Resources Conservation Services

Greene County Resource Management

City Utilities of Springfield

Greene County Soil and Water Conservation District

Southwest Missouri RC&D

James River Basin Partnership

Missouri Department of Conservation

University of Missouri Cooperative Extension Service

City of Springfield--Public Works

League of Women Voters

Local Homeowners/Neighborhood Associations

OTC Turf and Landscape Management Program

Master Gardeners of Southwest Missouri

CHOOSE ENVIRONMENTAL EXCELLENCE
Springfield Greene County

October, 2003

Dear Show-Me Yards and Neighborhoods Professional,

I hope your spring and summer seasons were successful. I'm hearing that, after a very slow start last spring, overall, business has been good for this year. I wanted to remind you of a couple of items and send info about an exciting opportunity.

With the change in seasons, hours at the City's Yardwaste Recycling Center will also be changing (see press release/brochures enclosed). Also, this is a good time to remind your customers of the availability of our Household Chemical Collection Center as they do their fall clean-up and get rid of left-over products (brochure enclosed). As always, copies of our brochures are available to you for your customers.

Please be reminded of the City ordinance that prohibits dumping leaves (or other yardwaste) into the streets, gutters, drains, etc. We would appreciate not only your cooperation, but your communicating this reminder to your customers, as well. We've been working very hard to get this information communicated to the community, and certainly appreciate your help. One of our communication tools is enclosed for your reference – this is a stuffer included in the October City Utilities utility bills.

I am also enclosing an announcement of a professional development opportunity offered through the Missouri Department of Conservation. The Grow Native! Landscape Professional Training and Licensing Program is being held November 5 and 6 in Jefferson City. I would encourage you to seriously consider participating in this opportunity. As you recall, the use of native plants is encouraged as a part of our Show-Me Yards & Neighborhoods Program for several reasons, not the least of which is that they tend to need less chemical treatment and less frequent watering, once established.

Last, but certainly not least, I'm enclosing a copy of the Show Me Yards & Neighborhoods Professionals Listing. Please review your listing and let me know if there are any changes. We are speaking to several groups during this, one of our busiest seasons, and want to be sure we are giving out accurate information.

Please call me anytime I can be of assistance!

Barbara J. Lucks
Materials Recovery/Education Coordinator
Springfield Public Works Department
Project Coordinator, Show-Me Yards & Neighborhoods

SHOW-ME YARDS & NEIGHBORHOODS

Rx Your Prescription For A Healthy Yard!

Show-Me Yards & Neighborhoods is an educational program designed to raise awareness about the role urban storm water runoff plays in the water quality of nearby streams, creeks, rivers, and lakes. Through voluntary educational activities, SMY&N offers environmentally responsible alternatives to traditional lawn care and construction practices that contribute to the runoff of contaminants and excess nutrients. SMY&N also recognizes and commends individuals and professionals who put the SMY&N techniques into practice – homeowners can earn an attractive yard sign and professionals can become certified.

Storm Water Runoff

- Urban storm water runoff is a major component of non-point source water pollution. Non-point source pollution originates in such common areas as urban lawns, parking lots, driveways, and construction sites. Until recently, non-point source pollution was largely unregulated. Point-source pollution, which includes sources such as wastewater treatment plants, industrial sites, etc., has been regulated for some time. Even with the regulation and compliance of the point-sources, these efforts are not enough; hence, the attention is now being drawn to the non-point sources.
- The "big deal" about nutrient runoff is that excess fertilizer runs off the urban lawn and finds its way into the streams, lakes, creeks, etc., fertilizing the algae in the waterways and causing excess algae growth which leads to clogging the waterways and reducing the available oxygen for fish and other aquatic life. A lawn can only use a limited amount of fertilizer and any it cannot use runs off with the next rain event or with excess irrigation.
- Common practices such as continuous impervious surfaces (such as directing water from the roof, down the drainpipe, onto the drive, into the street, down the storm drain) do not allow any of the water to be filtered nor to soak into the soil. Both of these desirable practices can be achieved by allowing the water to pass through a grassy or mulched area. The idea is to keep the water from running off, and if it must run off, to filter contaminants and nutrients from it.
- Eroding soil from construction sites or other areas of bare soil are another source of pollution. Soils contain nutrients and loose particles which can cloud bodies of water and add to the nutrient overloading. Best Management Practices (BMP) assist builders and developers in preventing soil erosion during construction. Regulations exist to require soil erosion prevention during construction.
- Likewise, homeowners are encouraged to utilize buffer areas and grassy areas to slow down and filter storm water leaving their property.
- **For more information:**
  Watershed Committee of the Ozarks (417) 866-1127
  www.watershedcommittee.org
  Show-Me Yards & Neighborhoods (417) 864-2006
  City of Springfield:
  www.springfieldmogov.org/community/cee_showme.html
  Missouri Department of Natural Resources (417) 891-4300
  www.dnr.state.mo.us

Importance of Trees

- Trees are an important part of any home landscape. They offer needed shade and beauty. Know the tree's growing requirements and habits before planting in a landscape – Right tree, right place!
- Planting techniques are important for the health of the tree. "A wider hole is much better than a deeper hole."
- Don't overlook the value of mulch around the tree base. Mulch provides weed control, cooling of the soil, moisture retention, and protection from weed-eater and lawn mower injuries. Mulch should not be placed against the tree bark. Think donut, not volcano.
- Trees are not carrots – they don't have a central "tap root." Rather, they have a network of shallow roots that surround the tree and extend to the drip line – the area below the end of the farthest branch. All of the roots in this area should be protected from disturbance or injury.
- **For more information:**
  Missouri Dept. of Conservation, Cindy Garner, (417) 895-6880 – Ext. 1037
  Preventing Construction Damage to Trees (MU G6886)
  How to Mulch a Tree (SMY&N)
  Working with Arborists (SMY&N)

For more information:

Show-Me Yards & Neighborhoods (417) 864-2006 www.springfieldmogov.org/community/cee_showme.html

Native Plants

Native plants are plant species that have grown in this area for generations. They have become adapted to our crazy growing climate and not-so-perfect soils. To say the least, they are a hardy lot. This survivability makes the use of native plants in your landscape beneficial in several ways:

- Once established, Natives need less water. Native plants have a natural resistance to pests and diseases which means fewer pesticides and chemicals are needed.
- Native plants, being better adapted to our soil conditions, generally need fewer applications of fertilizer.
- Native plants furnish needed food and habitat for many beneficial insects and native wildlife, such as hummingbirds and other songbirds.
- Lest you think Natives are not attractive, remember, in Southwest Missouri, we are in a unique position to have both prairie plants and woodland plants, thus giving us a great diversity in Natives.
- Two words of caution: Be sure the place where you buy your Native plants is reputable and has grown the plants locally to get the benefits of local adaptation, and remember it is against the law to take any plant from public lands.
- **For more information:**
  *The Missouri Department of Conservation has an excellent program called **Grow Native!** that explains where to purchase the plants, gives examples of specific garden arrangements such as butterfly gardens, hummingbird gardens, etc.*
  www.grownative.org

The Importance of Soil and Soil Testing

- Soil testing provides an estimate of the plant-available nutrients in the soil and is an essential tool for a sound fertilization program. Periodic soil testing will help correct nutrient deficiencies, avoid excess fertilizer applications, and maintain a healthy lawn.
- A routine soil fertility test will give you the pH, neutralizable acidity, phosphorus, calcium, magnesium, organic matter, and cation exchange capacity.
- The soil test results are only as good as the representative sample. Know how to properly take a soil sample by following the sampling tips found in "Soil Testing for Lawns."
- Soil test results are mailed to the customer in a self-explanatory form that describes exactly what additional nutrients or amendments need to be added.
- Local soil samples for testing may be submitted to the local MU Extension Center.
- **For more information:**
  Missouri Outreach and Extension (417) 862-9284
  Soil Testing for Lawns (SMY&N)

Fertilizers/Pesticides

- For healthy lawns and gardens, plant food must be applied in the correct form, at the right time, and correct amount. Excessive amounts are not healthy for plant growth or the environment.
- Integrated Pest Management (IPM) advocates a balanced combination of natural, chemical, and organic controls.
- Pesticides are most commonly used to control insects, diseases, and weeds. When applying pesticides, always use the least toxic material to man and the environment to get the job done.
- Always apply pesticides in accordance with label instructions. It is the law!
- Organic, non-chemical alternatives also exist.
- **For more information:**
  Missouri University Outreach and Extension (417) 862-9284
  Show-Me Yards & Neighborhoods (417) 864-2006
  Lawn Maintenance Calendar (MU G6705) (SMY&N)
  Pesticides and the Environment (MU G7520)
  Lawn Establishment and Renovation (Cool Season Grasses) (MU G6700)

Safe Handling of Chemicals

- If chemicals are necessary, handle them responsibly.
- Understand the problem you are trying to remedy. Avoid a "one size fits all" approach. Target the insect or disease specifically. Learn the life cycle to find the time when the pest is the most vulnerable – that will be the time the least amount of chemical is the most effective.
- Choose the correct pesticide – the one with the lowest toxicity that will safely and effectively control the pest. Read the label carefully. Obey all cautions. Do not use the chemical for uses or in mixtures other than specified on the label.
- Transport the pesticide in the trunk of the car or in the back of a truck to avoid potential contamination problems should the container break.
- Before applying the chemical, examine the area to be treated to determine if there are plants, animals, or pets that could be harmed by the pesticide. Avoid spraying on windy days.
- Wear protective gear indicated on the label. Don't eat, drink, or smoke when using pesticides. Avoid wearing soft contact lenses when using pesticides.
- Buy only the amount you will use. Avoid having large supplies of pesticides on hand. Store pesticides in their original containers with the original labels visible and intact. Mark the date on the containers and use the oldest first.
- Store in a dry area to prevent corrosion of metal containers and caking of bagged dry materials. Check for temperature requirements.

- Don't allow chemicals to become mixed with other chemicals. Dangerous and deadly interactions can result.
- It is best to set pesticide containers in plastic tubs or bins to catch any spills and protect from corroded containers.
- Dispose of chemicals properly. Do not flush them down the toilet or down the sink. Do not pour them out on the ground or down a storm drain. City storm drains flow to area creeks and streams, not wastewater treatment plants.
- Citizens of Springfield and Greene County may bring their chemicals to the City's Household Chemical Collection Center. Citizens of surrounding counties may call the City's Recycling Hotline (864-1904) for information about collections in their county.
- **For more information:**
  City's Household Chemical Collection Center and Recycling Hotline (417) 864-1904
  City of Springfield:
  www.springfieldmogov.org/community/recycling
  Pesticides and the Environment (MU G7520)

Compost/Mulch

- Compost, in general terms, is best suited to be mixed with the soil as a soil amendment. It does not have a significant nutritional value, but it does give the soil the ability to transfer nutrients to the plants easier. It improves the texture of the soil, making clay soils drain easier and sandy soils hold moisture better. You've already heard how critical healthy soil is to the success in growing.
- Compost can be mixed with topsoil in new lawns and planting areas, worked into existing turf through aeration, or added as a top dressing.
- Compost is available, bagged, at most garden centers. The City has bulk compost, made from grass clippings and leaves, available at the City's Yardwaste Recycling Center.
- **For more information about compost and composting:**
  City's Yardwaste Recycling Center
  and Recycling Hotline (417) 864-1904
  Mulches (MU G6960)
  Making and Using Compost (MU G6956)
- There are many mulching materials available. SMY&N recommends organic mulch materials because they have the added benefit of eventually decomposing and adding valuable organic matter to the soil.
- For our purposes, mulch is used above the ground as an insulating medium. Mulch helps the soil retain moisture, keep out weeds, and stabilize soil temperature. Generally, it is applied 3 – 4 inches deep. It is especially good as a protective ring around trees to avoid damage from weed-eaters and lawn mowers. (A hand-out is available to show people how to properly mulch a tree – the mulch should NOT be piled up against the trunk of the tree – donut, not volcano!)
- Mulch is widely available, bagged and in bulk from garden centers. The City has two types of shredded wood mulch available. Screened mulch ($10.00 cu. yd.) and unscreened mulch (currently free) is available at the Yardwaste Recycling Center. A $1.00 per cu. yd. ($5.00 minimum) loading fee is charged.
- **For more information about mulch and uses of mulch:**
  City's Yardwaste Recycling Center and Recycling Hotline (417) 864-1904
  Mulches (MU G6960)
  Making and Using Compost (MU G6956)

Watering/Mowing

- Lawn water amounts will depend upon the look you want to maintain. Cool season grasses may go dormant during the summer with little additional water. To maintain an actively growing lawn, additional water may be needed. During extreme drought conditions, supplemental water may be needed to prevent lawn damage.
- To keep a lawn active, most lawns need at least an inch of water weekly.
- Water conservation is increasingly important as water supplies become more and more limited. Some conservation measures include:
  - Measure the amounts of water applied. Collection cans throughout the lawn will tell you how much water falls in a given time.
  - Watch watering patterns. Avoid runoff. Avoid watering driveways, sidewalks, etc. Hand water areas that don't "fit" sprinkler patterns.
  - Encourage deep watering to promote deep root development.
  - Know the best time to water most effectively. Avoid watering in the heat of the day or at night. Use a watering system that doesn't waste water. Check for leaks regularly.
- Consider alternatives to turf that require less water, such as Native plants.
- Mowing height is important for the health and vigor of the grass.
- It is suggested to not remove more than 1/3 of the grass height at one time for cool season grasses. Taller mowing heights encourage better root development.
- Following this practice, clippings will naturally decompose and bagging will not be necessary.
- **For more information:**
  Show-Me Yards & Neighborhoods (417) 864-2006
  Home Lawn Watering Guide (MU G6720)
  Water Efficient Gardening and Landscaping (MU G6912)
  Lawn Maintenance Calendar (MU G6705) (SMY&N)
  Don't Bag It! (MU G6959)
  See also Native Plant section.

SHOW-ME YARDS AND NEIGHBORHOODS ADDRESSES NON-POINT SOURCE POLLUTION

As we progress in successfully addressing point-source water pollution and nutrient loading, it becomes increasingly more apparent that pollutants and nutrients from non-point sources must also be reduced significantly in order to bring about the improvements and protection of our water quality for which we are working. As a bit of reference, non-point sources may include run-off from areas such as construction sites, parking lots, and other impervious surfaces, agricultural sources, and residential or business lawns. Point sources are those larger sources easy to "point" to, such as municipal treatment plants.

Show-Me Yards and Neighborhoods (SMY&N) is a program to address non-point source pollution – specifically nutrient run-off from lawns – commercial, institutional, or residential.

SMY&N is a part of Choose Environmental Excellence and dovetails very nicely with the basic components of the Choose Environmental Excellence program:

- Acknowledge we all make an impact on the environment
- Encourage education to raise awareness and give solutions
- Ask that people consider the environment in their everyday choices and ***Choose Environmental Excellence***

SMY&N is a program developed to address residential or business lawns. Education and outreach activities are designed to increase awareness of the significant role lawns play in the total amounts of nutrients and pollutants that reach our rivers, streams, and lakes. In addition to creating awareness, solutions are provided, as well as recognition incentives for homeowners, lawn care providers, and neighborhoods that put the practices to work. Assistance with best management practices is available for builders, developers, and landowners. Stream monitoring activities will provide information about the effect of the activities.

The large number of partners participating in SMY&N is indicative of the broad base of support and interest in protecting our water quality.

Homeowners' workshops are available. Homeowners are encouraged to follow best management practices and can choose from a checklist to earn points or "inches." Reaching 36 inches earns an attractive "Show Me Yard" sign.

Lawn care professionals' workshops are tailored to the business' needs. Benefits for both the businesses and their customers are emphasized: sharing the relationship-building information; enabling the businesses to position themselves as responsible, caring professionals; utilizing the information to set themselves apart from other businesses.

SMY&N displays and homeowner seminars have appeared in the Home Show and at the Lawn and Garden Show since 2001. Several Lawn Care Field Days have been held.

Homeowners, contractors, and other professionals associated with lawn care are encouraged to participate in Show-Me Yards & Neighborhoods.

For more information or to access the reference materials mentioned in this publication, please visit:
www.muextension.missouri.edu/explore/
www.springfieldmogov.org/community/cee_showme.html

Show-Me Yards & Neighborhoods is a project of Springfield/Greene County *Choose Environmental Excellence*

Funding provided by:
- Missouri Dept. of Natural Resources
- City of Springfield/Public Works
- Watershed Committee of the Ozarks
- James River Basin Partnership

Technical assistance provided by:
- Natural Resources Conservation Service
- University of Missouri Outreach & Extension
- Master Gardeners of Southwest Missouri
- Ozarks Technical Community College Turf & Landscape Management Program

Supporting Partners:
- Greene County Resource Management
- City Utilities of Springfield
- Southwest Missouri RC&D
- Greene County Soil & Water Conservation Service
- League of Women Voters

Missouri Department of Natural Resources

Funded, in part, by a grant from US EPA under Section 319 of the Clean Water Act.
Springfield/Greene County ***Choose Environmental Excellence***
PO Box 8368 Springfield, MO 65802
(417) 864-2006
www.springfieldmogov.org/community/cee_showme.html

Printed on recycled paper.

12/03 Produced by Solid Waste Management Division

SHOW-ME YARDS & NEIGHBORHOODS

Rx Your Prescription For A Healthy Yard!

Show-Me Yards & Neighborhoods is an educational program designed to raise awareness about the role urban storm water runoff plays in the water quality of nearby streams, creeks, rivers, and lakes. Through voluntary educational activities, SMY&N offers environmentally responsible alternatives to traditional lawn care and construction practices that contribute to the runoff of contaminants and excess nutrients. SMY&N also recognizes and commends individuals and professionals who put the SMY&N techniques into practice – homeowners can earn an attractive yard sign and professionals can become certified.

Cool-Season Grasses Lawn Care and Maintenance Calendar

Lawns may be maintained at different levels of quality according to individual preference, but good lawns seldom "just happen." This summary outlines major steps required to maintain a year-round high-quality lawn.

The practices refer primarily to cool-season grasses, such as Kentucky bluegrass, perennial ryegrass, tall fescue, and fine fescue. For bermudagrass and zoysiagrass lawns, see MU publication *G 6706, Establishment and Care of Zoysiagrass Lawns.*

Timing is approximate for Southwest Missouri; it may vary two weeks or more depending on weather conditions.

March

Organic practices

- As ground temperatures near 50 degrees F, (March or April) apply Corn Gluten (60% protein) for early pre-emergent control or if weeds are not a consideration, this would be an appropriate time to apply a general organic fertilizer.

Non-organic practices

- As needed, start mowing at recommended heights (see Table 1).
- Use broadleaf herbicides for perennial and winter annual weeds not controlled in the fall.
- Overseed thin spots early if missed last fall. (Do not overseed with perennial or annual ryegrass.) Do not use herbicides in overseeded areas until grass is fully established.
- Watch for moles; traps are the only effective means of control.

April/May

Organic practices

- Second application of Corn Gluten 45 - 60 days following the first application. This is the most important application to prevent weed seed germination.
- Best time for Beneficial Nematode application to control grubs at larval stage. Apply during rainy, cool weather.
- Control broadleaf weeds by hand pulling or spot treatment with Horticultural Vinegar.

Non-organic practices

- Aerate if thatch is 1 inch deep or soil is compacted.
- Use crabgrass preventers (preemergence herbicides) by April 1st. Start top-dressing low spots as grass grows.

For more information:

Show-Me Yards & Neighborhoods (417) 864-2006 www.springfieldmogov.org/community/cee_showme.html

- In May, fertilize if needed when spring growth begins to slow. Use a slow-release form of nitrogen, such as polymer- or sulfur-coated urea, urea formaldehyde, or a natural organic to improve lawn quality without promoting excessive leaf growth.
- Apply postemergence broadleaf herbicides for control of summer annual weeds. If needed, start postemergence control of crabgrass, goosegrass, or nutsedge near the end of May. (See *G 6750, Home Lawn Weed Control.*)
- Watch for first brood of sod webworm. Apply insecticides about 10 days after major moth flight if damage to turf is seen, generally in May.

June/July

Start watering as needed. Water infrequently to a soil depth of 6 inches. Overwatering can be harmful, but water frequently enough to prevent drought stress. Kentucky bluegrass under stress is susceptible to disease. Don't start watering if you cannot continue full season. Rapidly growing lawns need frequent mowing. Let clippings remain unless they are excessive.

Organic practices

- Apply all-purpose organic fertilizer to slowly feed plants through summer.

Non-organic practices

Continue frequent mowing as needed and irrigate only enough to prevent turf wilting. When irrigation is needed and conditions are hot and humid, water between 6:00 a.m. and 10:00 a.m. to reduce disease occurrences.

- Search for white grubs in brown areas. Dead turf in those areas can easily be peeled from the surface. If 5 to 10 grubs appear in 1 square foot, treat with an appropriate insecticide near the end of July. Thoroughly irrigate to move the insecticide into the zone where grubs are active.
- Apply second application of preemergent herbicide for crab grass control in June.

August/September

Organic practices

- If lawn renovation is necessary, begin preparation. Remove weeds by mechanical control, cover with plastic, or spray with Horticultural Vinegar.
- Early to mid September, seed with high quality blend when adequate rains or irrigation are available.
- Apply Corn Gluten mid September to stimulate fall growth. If seeding, delay application until second mowing of new grass. This is the most important time to build soil fertility through use of organic fertilizer.

Non-organic practices

- Fall seeding and sodding is best; prepare seedbed now. Continue watering and insect control, if necessary. Make plans for fall lawn renovation. Select and purchase grass seed and fertilizer. If lawns are to be totally renovated, kill all vegetation with a glyphosate (Roundup®) application near midmonth.
- Have soil test performed if you are unsure of basic fertility level.
- Thoroughly water dormant lawns in last week of August to start fall growth.
- Apply selective broadleaf herbicide no later than one month prior to new seeding. If needed, broad leaf herbicide may be applied to newly established lawns after the second mowing.
- September is an important time to fertilize. Apply 1-1.5 pounds nitrogen per 1,000 square feet.
- Plant or seed new lawns in early September through mid-October; keep well watered.
- Core aeration prior to over seeding prepares the seed bed and relieves compaction.
- Rake; dethatch; kill weed patches; overseed thin spots. Resume top-dressing, if needed.

October/November

Non-organic practices

- This is the best time to apply broadleaf herbicides, especially for chickweed control.

- Mow at regular heights until growth stops; mulch tree leaves into turf unless quantity prohibits. Keep leaves from packing and smothering grass.
- Apply lime if soil test indicates need.
- Fertilize moderately by applying 1 pound of nitrogen per 1,000 square feet after cool days slow leaf growth. Nutrients at this time will encourage root growth and thickening of turf. Soluble nitrogen fertilizers (containing urea, ammonium nitrate or ammonium sulfate) are used more efficiently by turf in late fall.
- Irrigate, if necessary, so that turf goes into winter with moist — not wet — soil.
- Recondition lawn mower; store with clean oil. Use soluble fertilizer or calcium chloride instead of salt for melting winter ice.

November/December

Organic practices

- Application of organic fertilizer as winterizer.

Reference Information

Fertilization

The basis of a good fertility program begins with a soil test. Soil testing is recommended at least every three years. A fertility program can be established to meet your turf needs based upon soil test results.

The lawn will absorb only what it needs to maintain growth. Any excess fertilizer is wasted and can easily become run-off, contributing to excess nutrient problems in area lakes and streams. Urban lawn run-off is a major contributor to excess algae growth caused by these nutrients.

In the past, too much emphasis has been given to spring as the best time to fertilize cool season grasses. If a lawn is stunted and has a pale to yellowish green appearance, a very moderate feeding at this time would be advisable.

On the other hand, fertilizing a lawn that already had moderate vigor at the time most of us get “spring gardening fever” will stimulate excessive, succulent growth. Excessive leaf growth usually occurs at the expense of new root growth; this places the plant at a further disadvantage for summer and needlessly increases the amount of mowing required. Turf becomes more susceptible to disease and other stresses that will take their toll during summer.

Nitrogen fertilizer

These materials fall into two basic groups: soluble and slow-release. Soluble types are available quickly to plants even at low temperatures they stimulate rapid growth and are depleted quickly. Steady, uniform growth requires frequent, light applications. Slow-release types of several different forms release nutrients to plants over a long period of time.

Lawn specialty fertilizers often contain 24 to 50 percent of the total nitrogen in slow-release form and the remainder in quickly soluble forms. This combination gives immediate response in cool weather while the remainder is available over a longer period.

When 35 to 50 percent or more of the nitrogen is a slow-release type, rates may be increased up to 50 percent. With these fertilizers, frequency of application may sometimes be reduced.

A precaution should be observed: Nitrogen sources from urea (quickly soluble) should not be confused with urea-formaldehyde, UF, (slowly available).

Rates and Frequency

Recommendations are usually based on amounts required to supply a given amount of nitrogen per 1,000 square feet of lawn. Most lawn fertilizers are “complete” in that they contain the three major nutrients: nitrogen (N), phosphorus (P) and potassium (K) and, therefore, the amount of phosphorus and potassium applied is determined by the ratio of these two elements to nitrogen.

Two fertilizers with label analyses of 20-5-10 and 12-12-12 would contain 20 and 12 percent N, 5 and 12 percent P, and 10 and 12 percent K, respectively. For the first fertilizer, the N:P:K ratio would be 4:1:2, and the second would be 1:1:1. The amount of fertilizer required to apply 1 pound nitrogen to 1,000 square feet can be calculated by dividing 100 by the percentage of nitrogen in the fertilizer (100 4 20 = 5 pounds fertilizer per 1,000 sq. ft.).

Suggested Annual Fertilization Schedule

For routine maintenance where soil test or experience indicates no major deficiencies, use a lawn fertilizer with an approximate ratio of 3:1:1 or 4:1:1

or 4:1:2 at the recommended rate according to the Lawn Maintenance Schedule.

Where soil test indicates low phosphorus or potassium levels or where basic fertility levels are not known, use fertilizer with a ratio that more closely approximates 1:1:1 or 2:1:1 or 3:1:2. If lawn application rates are not given on the container, amounts to apply can be calculated as in the example above.

Lime

Do not apply lime routinely to established lawns unless a soil test indicates a need. Excess can be as harmful as deficiency. Established lawn soils seldom need to be limed unless a soil test indicates a moderately to severely acid soil of pH 5.5 or lower.

Where lime is needed, apply finely ground or specially pelletized agricultural limestone at rates up to 50 pounds per 1,000 square feet. If more is required, make separate applications about six months apart. Limestone can be applied almost any time, but fall or early winter is the best time.

Organic Fertilization

Corn Gluten (60% protein) 9% nitrogen rich slow release fertilizer. Unique growth inhibitors present prevent root hairs from newly germinated seeds from being able to take up moisture; thus the seed withers and dies.

General Application Rates for Corn Gluten & Organic Fertilizer:

- 20 lbs. per 1,000 sq. ft. while building soil fertility and turf density.
- 10 lbs. per 1,000 sq. ft. for maintaining healthy turf.

Compost:

- Apply one-quarter to one-half inch compost any time grass is actively growing as a soil conditioner.
- Spread over grass seed as a moisture retentive mulch during the critical germination period.
- Core aeration prior to adding compost allows organic matter to be worked into existing turf areas.

Mowing

Mowing height and frequency directly affect lawn quality. The common practice of mowing a lawn short, under the assumption it will require less frequent cutting, is responsible for much lawn deterioration.

If cut too closely, there is not enough leaf surface to manufacture necessary foods for balanced growth. For this reason, a standard guide is to never remove more than one-third of the green leaf area with a single mowing. If a mowing is missed, cut only half the way back to the intended heights, then re-mow in a couple of days to regular level. Recommended mowing heights are presented in Table 1. On the other hand, allowing the grass to get too tall necessitates removal of more than 1/3 of the leaf area and contributes to thatch build-up.

Table 1. Recommended mowing heights for cool-season grasses in Missouri.

Turfgrass	Mowing heights (inches)[1]
Tall fescue	2.5-3.5
Kentucky bluegrass	2.0-3.0
Perennial ryegrass	2.0-2.5
Creeping red fescue	2.0-3.0
Chewings fescue	2.0-3.0
Hard fescue	2.0-3.0
Sheep fescue	2.0-3.0

[1]Mowing heights may be adjusted according to climatic conditions, level of maintenance, and intended use.

Clippings seldom need to be removed. With proper mowing, clippings filter down to the soil surface, decay and recycle nutrients back to the soil. Remove clippings when they remain on the surface or when excessive thatch is already causing a problem.

- Keep blade sharp.
- Mow often when actively growing.
- Mow at or above 3-inch height.
- Mulch clippings to return organic matter and nutrients to the soil.
- Remove excess clippings to compost.
- Mowing “tall”
  - Inhibits weed seed germination.
  - Shades soil and prevents water loss through wind and sunlight exposure.

- Slows water runoff and prevents soil erosion.

- Mow when grass is dry to prevent spread of fungal disease and improve quality of cut.

- Don't mow following wet periods, as this tends to promote soil compaction and disease.

Watering

Kentucky bluegrasses, fescue, and other cool-season grasses naturally protect themselves by going into a semidormant stage during periods of high temperature or drought. They cease growth and turn brown, but bounce back quickly with sufficient water and cooler temperatures.

Except in cases of extreme prolonged drought, tall fescue and Kentucky bluegrass do not need water to stay alive during the summer. However, their appearance suffers. During dormancy, drought-tolerant weeds such as plantain, thistles and dandelion dominate lawns.

Because of a deep, extensive root system, tall fescue remains green longer into the summer than other nonirrigated cool-season grasses.

Kentucky bluegrass has many underground stems, called rhizomes. Each rhizome can produce several new bluegrass shoots that result in turf thickening in autumn when water becomes available following summer dormancy.

The principal purpose of summer watering is to maintain an attractive green surface. Watering will not substitute for poor fertility or improper mowing. Extra growth stimulated by watering increases fertility requirements and potential disease pressure.

If you cannot give attention to management, allow the turf follow its natural tendencies to go dormant during summer except during excessive drought conditions when loss of turf can occur. Plants are brown in appearance from lack of water, but not necessarily dead. (See Watering Guidelines.) Homeowners who have a lawn care service should not allow their lawn to enter drought dormancy.

Watering Guidelines

- Shallow, frequent sprinkling to add a little water each day is not generally recommended. It encourages shallow, weak roots, crabgrass, and some diseases. Irrigate to the full depth of the root system often enough to prevent wilting. (See MU publication *G 6720, Home Watering Guide.*)

- Kentucky bluegrass and fine leaf fescue roots may not reach depths greater than 4 to 6 inches during the summer. About 1 inch of water (620 gallons per 1,000 sq. ft) can be stored in an average Missouri soil to this depth, and this should last about a week. A reasonable guideline for summer lawn irrigation is to apply enough water in addition to natural rainfall to total 1 inch per week. Greater frequency with lesser water amounts may be required on sandy soils due to less water holding capacity.

- Don't guess at how much water is being applied to reach the desired wetting depth. Place tall, straight-sided cans in the sprinkler pattern. Measure water depth in the cans to determine the amount of water applied.
  Thrust a small probe (screwdriver) into the soil. Decreased resistance to the probe in wetted soil can help gauge depth of wetting.

- Some sprinklers apply water faster than soil can absorb it. Few established lawn soils in Missouri can absorb 1/2 inch per hour; many absorb much less. To prevent waste, move portable sprinklers frequently. Properly engineered permanent irrigation systems with timing controls for "interval watering" do the best job.

- Steep slopes, hard spots, and hot areas require special attention. Mechanical aeration, extra slow watering, and use of wetting agents may help water infiltration.

- Watering deeply and infrequently increases root depth and promotes drought tolerance.

- Watering in the morning is most efficient and promotes a healthy turf.

- Water to point of run off. Allow water to soak in and then re-irrigate for deep soaking. This allows you at least a week between watering intervals.

- Allowing soil surface to dry between watering inhibits fungal disease and weed seed germination.

Aeration

On clay- or silt-type soils, or any turf receiving constant traffic, soil surface sealing and compaction can seriously impair turf growth. Grass roots are injured because air, water, and fertilizers cannot reach them in sufficient quantities. Mechanical aeration to reduce compaction is essential for continued turf health.

Aeration is best done by power equipment that pulls out small cores of soil. Power equipment is usually available at rental stores. Lawn care companies may also provide these services to their customers.

For small areas, suitable hand equipment is available, but using it is hard work. Even a spading fork plunged into the soil at 3-inch intervals when the soil is lightly moist — not wet — is far better than nothing at all.

Aeration should be done at least once a year where compaction is a problem. Fall is the best time for Kentucky bluegrass and tall fescue lawns, but aeration will be highly beneficial anytime the grass is actively growing and is not under heat and drought stress.

Thatch Control

Thatch is a layer of undecayed and decayed plant parts at the soil surface. It forms a barrier to water and air movement in the manner of a thatched roof.

Thatch is primarily a result of intense fertilization and improper mowing techniques. These practices promote excessive lateral growth of stems (stolons and rhizomes) and shallow roots; these shallow stems and roots are the main cause of thatch because they are resistant to decay. Properly mulched leaf clippings decay readily and do not contribute to thatch. Aggressive species, like Kentucky bluegrass and bermudagrass, and those that produce plant tissues resistant to decay, like zoysiagrass, are prone to thatch.

Thatch removal should be initiated whenever accumulation exceeds 1/2 inch. Early fall is the preferred time for dethatching cool season lawns.

Note-- the use of organic fertilizer promotes the necessary biological activity which will digest the thatch in less than one year, provided no toxic chemicals are used which suppress the biological activity.

For additional information on thatch, see MU publication *G 6708, Thatch — Enemy of Lawns.*

Top-dressing

Top-dressing is the periodic addition of a thin layer (1/4 to 1/2 inch) of soil or compost to the surface of growing turf. Top-dressing to mix soil with accumulating plant debris hastens thatch decay. Shallow depressions in turf can be gradually leveled by this practice as well.

Top-dressing may be done immediately after coring, dethatching, or slicing. Never bury the existing turf with too much top-dressing soil. After top-dressing, at least three-fourths of the grass plant should be exposed to sunlight.

For additional information on compost, see MU publication *G 6956 Making and Using Compost.*

Rolling

Rolling is not desirable for smooth, even lawns. Surface compaction is common in many lawns without adding to the problem by heavy rolling. Rolling moist soil causes maximum compaction.

When late winter freezing and thawing have resulted in “heaving” young plants out of the ground, or if mole activity is serious, rolling may be required. In such cases, roll soon after spring thaw when the soil surface is relatively dry, and use as light a roller as possible. Don’t roll more than is absolutely necessary.

Weed Control

The best weed control is a healthy, dense, competitive turf.

Chemical weed killers are useful, but should not be relied upon entirely to cure lawn weed problems. (See *MU publication G 6750, Home Lawn Weed Control.*) Suggestions for timing herbicide application for several common weed problems are indicated in the calendar of this guide.

Relative merits of using fertilizer-herbicide (weed and feed) or fertilizer-insecticide combinations should be considered carefully before they are used indiscriminately. In many cases, at least one of the ingredients may not be needed or will be used at an inappropriate time.

Disease and Insect Problems

Prevention is the best approach to disease problems in home lawns. Often by the time the disease is diagnosed, the damage has been done.

Controlling thatch, avoiding frequent, light irrigation, and proper fertilization for healthy but not

succulent grasses are simple lawn-grooming practices that may reduce diseases.

Two major insect pests are white grubs and sod webworm. White grubs are described in MU publication *G 7200, White Grubs in the Lawn.* Treating lawns every year with insecticides to prevent insect infestations is neither necessary nor advised.

Routine inspection of the lawn for white grubs and sod webworms is advised. Treat only after the insects have been properly identified, and only when they are in sufficient numbers to cause turf damage.

Organic Pest Controls

Horticultural Vinegar (20% acidity) An alternative to toxic herbicides may control many broad leaf weeds and grasses. Ineffective in controlling Bermuda grasses or other large root system plants.

Beneficial Nematodes may enhance grub control during larva stage and is most effective when applied during spring. Care must be taken during application, as this is a living organism. Also helpful in controlling fleas, ants, termites, and many other ground pests.

Garlic & Hot Pepper work great as insect repellants.

Orange Oil (de-lymenine) orange peel extract insecticide.

Renovation

If your lawn is less than acceptable but contains at least 40 percent desirable grasses, you may be able to replant without preparing a completely new seedbed. Start in August with steps similar to the following:

- Kill weeds and undesired grasses with appropriate herbicides or practices. (If only annual weeds are present, skip this step.)
- Remove dead vegetation and prepare seedbed with vertical renovating machine or heavy rake, set deep enough to bring soil to the surface. Clear off all debris.
- Now is an excellent time to incorporate organic matter, if needed.
- Add fertilizer and lime according to soil test and rake in. In late August or early September, scatter seed of desirable variety and drag or rake into loosened soil surface.
- Water thoroughly and treat as a newly seeded lawn.
- If the original problem was due to soil itself, poor drainage, or excessively thick thatch, till the lawn and start over following steps for establishing a new lawn. (See MU publication *G 6700, Cool-Season Grasses: Lawn Establishment and Renovation.*)

Safe Handling of Chemicals

If chemicals are used, handle them responsibly. For more information, see MU publication *G 7520 Pesticides and the Environment.*

- Understand the problem you are trying to remedy. Avoid a “one size fits all” approach. Target the insect or disease specifically. Learn the lifecycle to find the time when the pest is the most vulnerable - that will be the time the least amount of chemical is the most effective.
- Choose the correct pesticide - the one with the lowest toxicity that will safely and effectively control the pest. Read the label carefully. Obey all cautions. Do not use the chemical for uses or in mixtures other than specified on the label.
- Before applying the chemical, examine the area to be treated to determine if there are plants, animals, or pets that could be harmed by the pesticide. Avoid spraying on windy days.
- Wear protective gear indicated on the label. Don’t eat, drink, or smoke when using pesticides. Avoid wearing soft contact lenses when using pesticides.
- Buy only the amount you will use. Avoid having large supplies of pesticides on hand. Store pesticides in their original containers with the original labels visible and intact. Mark the date on the containers and use the oldest first.
- Dispose of chemicals properly. Do not flush them down the toilet or down the sink. Do not pour them out on the ground or down a storm drain.

Citizens of Springfield and Greene County may bring their chemicals to the City’s Household Chemical Collection Center. Citizens of surrounding counties may call the City’s Recycling Hotline (864-1904) for information about collections in their county.

a:Lawn Maintenance Calendar/BL#1/wp

SHOW-ME YARDS AND NEIGHBORHOODS ADDRESSES NON-POINT SOURCE POLLUTION

As we progress in successfully addressing point-source water pollution and nutrient loading, it becomes increasingly more apparent that pollutants and nutrients from non-point sources must also be reduced significantly in order to bring about the improvements and protection of our water quality for which we are working. As a bit of reference, non-point sources may include run-off from areas such as construction sites, parking lots, and other impervious surfaces, agricultural sources, and residential or business lawns. Point sources are those larger sources easy to "point" to, such as municipal treatment plants.

Show-Me Yards and Neighborhoods (SMY&N) is a program to address non-point source pollution – specifically nutrient run-off from lawns – commercial, institutional, or residential.

SMY&N is a part of Choose Environmental Excellence and dovetails very nicely with the basic components of the Choose Environmental Excellence program:

- Acknowledge we all make an impact on the environment
- Encourage education to raise awareness and give solutions
- Ask that people consider the environment in their everyday choices and ***Choose Environmental Excellence***

SMY&N is a program developed to address residential or business lawns. Education and outreach activities are designed to increase awareness of the significant role lawns play in the total amounts of nutrients and pollutants that reach our rivers, streams, and lakes. In addition to creating awareness, solutions are provided, as well as recognition incentives for homeowners, lawn care providers, and neighborhoods that put the practices to work. Assistance with best management practices is available for builders, developers, and landowners. Stream monitoring activities will provide information about the effect of the activities.

The large number of partners participating in SMY&N is indicative of the broad base of support and interest in protecting our water quality.

Homeowners' workshops are available. Homeowners are encouraged to follow best management practices and can choose from a checklist to earn points or "inches." Reaching 36 inches earns an attractive "Show Me Yard" sign.

Lawn care professionals' workshops are tailored to the business' needs. Benefits for both the businesses and their customers are emphasized: sharing the relationship-building information; enabling the businesses to position themselves as responsible, caring professionals; utilizing the information to set themselves apart from other businesses.

SMY&N displays and homeowner seminars have appeared in the Home Show and at the Lawn and Garden Show since 2001. Several Lawn Care Field Days have been held.

Homeowners, contractors, and other professionals associated with lawn care are encouraged to participate in Show-Me Yards & Neighborhoods.

For more information or to access the reference materials mentioned in this publication, please visit:
www.muextension.missouri.edu/explore/
www.springfieldmogov.org/community/cee_showme.html

Show-Me Yards & Neighborhoods is a project of Springfield/Greene County *Choose Environmental Excellence*

Funding provided by:
- Missouri Dept. of Natural Resources
- City of Springfield/Public Works
- Watershed Committee of the Ozarks
- James River Basin Partnership

Technical assistance provided by:
- Natural Resources Conservation Service
- University of Missouri Outreach & Extension
- Master Gardeners of Southwest Missouri
- Ozarks Technical Community College Turf & Landscape Management Program

Supporting Partners:
- Greene County Resource Management
- City Utilities of Springfield
- Southwest Missouri RC&D
- Greene County Soil & Water Conservation Service
- League of Women Voters

Missouri Department of Natural Resources

Funded, in part, by a grant from US EPA under Section 319 of the Clean Water Act.
Springfield/Greene County ***Choose Environmental Excellence***
PO Box 8368 Springfield, MO 65802
(417) 864-2006
www.springfieldmogov.org/community/cee_showme.html

Printed on recycled paper.

12/03 Produced by Solid Waste Management Division